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ABSTRACT

The eventual role that educational and clinical sport psychologists may play in assisting high-level athletes is discussed. An example of research on Olympic-level rifle and pistol shooters is presented as an example of how sport scientists can be involved in influencing policy for Olympic athletes. Obstacles which prevent the applied potential of sport psychology are pointed out. The prime obstacle is a lack of longitudinal psychological studies of elite athletes. Therefore, few proven psychological techniques for improving performance have been developed. Suggestions are made for research projects in this area. (JD)

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Reflections on Sport Psychology and the Olympic Athlete

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Reflections on Sport Psychology and the Olympic Athlete

I read with great interest the papers presented at the Skidmore College Conference. The ideas contained in these papers were especially exciting in light of the events of the times. In the aftermath of the Winter Games and amid the turmoil surrounding the Summer Olympics I am struck by the sheer enormity of the Olympic movement and the number of people it affects. For instance, the unexpected victory in ice hockey gave Americans a special chance to celebrate as a country. The hockey team's special triumph, as Pete Axthelm (1980) so aptly put it, was that this young American team "made us suspend our disbelief and root for the impossible" (p. 69). As the real life drama unfolded, it was particularly entertaining to me since this unforeseen outcome had caught the news media off guard before they could ruin it with their monotonous rhetoric and "TV-hype." Instead, as the seconds ticked away in the U.S.-Soviet Game, announcer Al Michaels simply shouted, "Do you believe in miracles." At the buzzer he cried, "Yes!," and a nation agreed with him. That was, I believe, their special triumph which at the same time vividly demonstrated the brighter side of what the Olympics can signify at times.

The coaches and athletes were understandably proud, but those who indirectly contributed, including parents, friends, physical education teachers, youth sport coaches, sport administrators, sport scientists, equipment manufacturers, and perhaps even a few sport psychologists, undoubtedly felt a sense of pride in their accomplishments. From this

"thrill of victory" to the current "agony in contemplating not going to Moscow," these same groups are visably depressed over the plight of America's athletes (A clinical sport psychologist would have a field day treating depression at the Olympic Training Center in Colorado Springs).

As Britain's Derek Johnson, former Olympic silver medalist, resentfully put it:

> If the government had taken other serious measures against the Russians they would have had much stronger support from us [the athletes]. As it is, they are making a token gesture - and we resent being that token. (p. 68)

Is the Olympic boycott being used as an opiate to calm the masses while it is "business as usual" with the Soviets in the economic and political spheres that are unrelated to the Olympics? In other words, are the British and American citizens displaying a form of false consciousness in the name of patriotism? If the answers to these questions are "yes," then what is being done about this? Carol Ogelsby, in her insightful reaction to Rainer Martens' paper (page of this volume), questions the lack of involvement of sport scientists, and I would also add physical educators and coaches, in the dialogue between social theory and public policy. Most of us know the position of the U.S. Olympic Committee, but what is the position of our other physical education and sport professional organizations/societies? If, as Ogelsby maintains, the basic tenet of Olympism is to "bring to the attention of the world that a national program in physical training and sport will not only develop stronger but better and happier citizens," then a boycott of the Moscow Olympics has considerably wider significance for the physical education and sport community. Given the current vascilation

on the part of other nations to support the boycott of the Moscow Olympics, it appears more and more likely that the only real losers in the 1980 Summer Olympics will be the U.S. athletes. I second Ogelsby's call for greater involvement of sport scientists in forming public policy, and commend the organizers of the Skidmore Conference for having the foresight to provide a public forum to discuss divergent views on national and international policy relevant to the Olympics and sport participation in general.[1]

I would like to turn now to an example from our own research on Olympic-level rifle and pistol shooters to illustrate how sport scientists can be involved in influencing policy for Olympic athletes. This particular policy problem was raised in Uriel Simri's paper (see page of this volume). Backed by the opinions of several sport scientists, and members of the European Shooting Federation (Predescu, 1978), the IOC Programme Committee has proposed that beginning with the 1984 Los Angeles Games there be separate shooting events for women. Without presenting any data to support their opinions, the Europeans argue that due to physical and psychological differences between the sexes, women are at a disadvantage relative to men. The decision by the IOC was that three events would be set aside for women (compared to the eight for men), and these women's events would be different from those of men (i.e., shorter duration of competition, lighter rifles, and one-half the number of shots). By no longer allowing mixed-sex teams, this legislation will have the effect of barring all women whose events do not correspond to the three women's events, and by changing the course of fire, it would make

the performances in the same men and women's events incomparable. At the present time the World champion in free rifle is a woman, and in the United States the reigning NCAA small-bore champion is a woman. The IOC decision met with strong opposition from the U.S. Women's International Rifle Association and an appeal has been made by the Union Internationale de Tir (U.I.T.) to reinstate mixed-sex competition for the events not designated "for women only."

Because we had collected extensive data on the physical, psychological, and psychophysiological characteristics of over 120 elite rifle and pistol shooters,[2] we were asked if we might like to respond to the nine points raised by the Europeans. With the help of graduate student Lauren A. Doyle, we submitted a 12-page report to Marie Alkire, U.S. representative to the U.I.T. Women's Committee, who presented it in February 1980 at the U.I.T. meeting in Mexico City (Alkire, Note 1). Our own research findings, in addition to general scientific findings derived from a literature review, negated all of the nine points mentioned. For example, the Europeans correctly pointed out that women generally have slower reaction times. Although we did find that male shooters reacted faster, this was not a differentiating factor between average and elite rifle shooters. Our data also refuted the argument that female shooters have more difficulty in coping with precompetitive stress. Except for having higher heart rates,[3] the female shooters reported approximately the same state- and trait-anxiety levels as male shooters. Overall, our data, as well as other scientific information reviewed, supported the opinion of Renata Wischinski (1978) that women

are physiologically and psychologically capable of becoming excellent shooters. Let us hope that logic will prevail and research findings like these will eventually help to shape the "policy climate" in these international sport governing bodies.

In the remainder of this paper I would like to address some of the important contemporary concerns of sport psychologists that are contained in the very interesting paper by Rainer Martens (see p. of this volume). I am basically in agreement with Martens as concerns the eventual role that the educational and clinical sport psychologists may play in assisting high-level athletes. I have some reservations, however, concerning our capability at this point in time in living up to the expectations surrounding the psychological skills approach he advocates. I would like to propose what I see as some of the obstacles that must be overcome before educational sport psychologists will be ready to institute a truly beneficial psychological skills training program. At the present time my intuition on the best path to choose appears to differ in certain respects from that of Martens. Since one person's path is another's maze, my approach will not please all readers. Indeed, it would be disappointing if it did, for it would imply agreement in areas full of dissidence; hardly representative of a fresh approach to long-standing issues. Hopefully, a fresh approach to the psychological training of elite athletes will emerge from this dialogue. Before proceeding to discuss my recipe for improving applied psychological research with athletes, I will first present what I consider to be the obstacles which currently prevent us from fully realizing the applied potential of sport psychology.

Application of Psychology to Sport: Obstacles to Overcome

I agree with Martens and Ogelsby that there is a deplorable dearth of applied research on Olympic athletes. It is important to briefly examine what I consider to be the reasons why sport scientists have failed to emphasize applied research. In the first place, sport research is not a high priority for funding by federal agencies - they do not even fund the training of our athletes, so why fund supportive research. This leaves the sport organizations, federations and societies as possible funding sources. Why have they been so reluctant to support applied psychological research? I think the answer is simple. By and large, our body of knowledge in sport psychology is too theoretical to be of any real value to the individual athlete. As others in this volume (Ogelsby, p. ; Balyi & O'Hara, p.) point out, the North American model has emphasized theory testing research. This state has often been a result of sport psychology programs which emphasize theory testing so students can meet the requirements for a research-oriented Ph.D. degree. In fact, much of the applied research we have done with shooters would not be appropriate for a Ph.D. degree and could not be published in most of our research journals. Few sport psychology programs offer an educational doctorate, and among those that do, few students have yet to become productive sport psychologists. As a result, our theoretical (basic) research in North America is unsurpassed, but the applied research necessary for a delivery system has lagged far behind that of the Europeans.

I am suggesting that the reason coaches and athletes give so little attention to psychological training is that they see very meager evidence to support its effectiveness. It's not that they are so naive as to think that psychological factors are unimportant; it's just that these factors cannot be reliably controlled and manipulated to produce powerful effects on performance. This is the message I get from talking to coaches at the Olympic Training Center.

An example of the rudimentary state of our knowledge of psychological training was recently provided on the TV series "America's Athletes - 1980" (formerly "Road to Moscow"). In this particular episode sport psychologist Jean Coleman was interviewed concerning the autogenic training techniques she was using with the British Olympic skeet shooters. Of the three shooters interviewed, two thought this type of psychological training was ineffective in producing better performance. They commented that they wanted a fairly high level of arousal for achieving maximum performance and the lowered arousal produced by autogenic training was undesirable. A third athlete said he would try anything to perform better. Why weren't these athletes more optimistic about the desirability of psychological skills training? I think the answer lies in the nature of the applied research process which is still in its infancy in the U.S. First, the procedures being used, including stress inoculation and autogenic training, are still of unproven usefulness in the sport realm, and second, even if they were proven, there have been no provisions made for scientific evaluation and diagnosis of specific problem areas. Let me elaborate on this.

The Need for Applied Research

It seems to me that before we can begin talking about delivery systems in which to teach psychological skills to athletes, we need to conduct applied research on elite athletes. Our problem has been that quite often we don't know what factors are associated with good performance. Even if an investigator finds some of the psychological characteristics of elite performers, most of these findings are at best only rough indicators. They are typically not replicated, the effects are often quite weak, and the findings generally describe the group rather than patterns of individual variability. In our work with rifle shooters some of these elite performers perform better when their heart rate is high than when it is low, and other shooters display the opposite pattern.[4] This finding is in marked contrast to the claim by educational and clinical psychologists (Coleman, 1977; Nideffer, in press) who believe that rifle shooters must have low heart rates to be successful. This mistaken conclusion has resulted from their applying general theories of arousal to all athletes. Without knowing the physiological and psychological patterns associated with the best performances of a given individual, widespread application of anxiety reduction techniques such as autogenic training and stress inoculation will meet with limited success.

We need to go beyond the typical studies in the psychological literature which are cross-sectional and which use the group mean as the solitary unit of analysis. To my knowledge, we have no longitudinal psychological studies of elite athletes; therefore, it is not surprising that there are few proven psychological techniques that can be used to enhance a given athlete's performance. Hypnosis and operant conditioning

may be exceptions, but the former is only effective for 30% of the population and the latter may insult the intelligence of elite athletes. Ogelsby raises a similar point in regard to the parallel Martens draws between learning physical skills and psychological skills. Unlike psychological skills, motor learning factors such as feedback, modeling, and practice are rather strong variables having an extensive theoretical and applied research base.

At the present time there appears to be at least three roles for sport psychologists: the sport scientist, who conducts theoretical and applied research in sport psychology; the educational sport psychologist, who is trained in research and psychological skills packages for direct application to athletes; and the clinical psychologist, who is licensed to treat individuals with psychological abnormalities. The roles, training, and job opportunities for the sport scientist and clinical psychologist are clearly distinguishable, but the boundaries between these two and that of the educational sport psychologist are very vague. A large part of the problem with the role of educational sport psychologist is lack of scientific information on athletes for the techniques they employ. Having such a scant knowledge base, I am not sure how "educational" the sport psychologist can be at this time. Most of the cognitive techniques have only recently been created and it is often assumed that they will automatically be applicable in sport settings. The question, however, is whether psychological techniques that have been based on work with pre-operative fears, test and speech anxieties

and a variety of phobias (aqua, agora, acro, etc.) can readily be extended to sport? Certainly we may wish to find out if they are. But if this is the goal, it is best achieved through the scientific method, and, as such, I fail to see how the educational sport psychologist is performing a role that is different from that of a sport scientist. It seems to me that good, sound applied research is a necessary prerequisite before the "Psychological Skills Training Program" can ever produce the performance benefits outlined by Martens.

Diagnosing the Athlete's Problem

Another problem faced by the educational or clinical sport psychologist is knowing whether or not the athlete is experiencing a psychological problem. Too often athletes and coaches, who are unable to detect biomechanical, physiological, or skill learning problems, will automatically attribute poor performance to psychological factors. I had a shooter recently come to me for help. He thought that if his self-confidence could be raised his performance slump would disappear. As I questioned him it became apparent that his problem began when he got a new trigger for his rifle. Now, was his problem really one of self-confidence or did he need to make modifications in his trigger and his trigger control? Obviously, using psychological skills to improve his self-confidence was not going to make his trigger better, but closer examination of his trigger might have improved performance and self-confidence.

Not being gunsmiths, we did not solve his problem, but in another shooter we were able to diagnose her problem and substantially improve her performance. While monitoring this collegiate rifle shooter, our

psychophysiological equipment showed that she was taking a very slight inhalation while pulling the trigger. In shooting you are told repeatedly to hold your breath for at least a half-second after the gun is fired in order to prevent movement at the tip of the barrel. The bad habit she had acquired was so ingrained that she took this visually undetectable inhalation on 20 consecutive shots with deliterious performance results. Not knowing her error, she attributed the irratic performance to lack of attentional control. While changing targets we informed her of the problem and on the next 20 shots she improved her score by 13 points. This point differential resulted from her correcting the error on 15 of the last 20 shots. Feedback of this kind has obvious practical significance, and we believe that errors can be completely eliminated by providing shooters with on-going, instantaneous biofeedback by means of an auditory signal.

As the above two examples illustrate, we need to do a much better job isolating the cause of the athlete's problem. Improper diagnosis and lack of a research base contribute to the error rate of educational and clinical psychologists. Unless this is corrected, I believe that sport psychology will continue to be viewed by coaches and athletes as more of a "gimmic" or "last resort" than a practically useful behavioral science.

A Recipe for Improving the Application of Sport Psychology Knowledge for Olympic Athletes

Up to now I have painted a rather dismal picture of the current state of the art for applied psychological research with Olympic athletes. It need not be this way. In other countries, particularly in eastern

Europe, their applied research efforts are much more advanced and we can learn a great deal from a closer inspection of their delivery systems.

In the first place, we must begin to establish an applied research base. In most sports, sport scientists must get involved in longitudinal research designed to gather normative data on the types of variables that are thought to be important for effective performance in a given sport. Initial observation and input from coaches and athletes will provide an initial source for variables believed to be important. Our experience in this approach has been that a whole host of problem areas have emerged, including those involving psychological, physiological, biomechanical, and motor learning variables. This is not surprising since few sports have been systematically studied.

At this point sport psychologists can choose to either restrict their research to the psychological problems or make an attempt to work with others to study all of the psychological, physiological, biomechanical, and motor learning problems in their totality. This latter approach is the one that is most often used in the eastern European countries and one that we have found is most desired by the U.S. coaches. The European sport psychologists either have access to already existing normative data or they work cooperatively with a team of research specialists to systematically gather this type of information. To my knowledge this approach is currently being used with the U.S. ski team and has been used with elite U.S. distance runners. What is important in this "team approach" is that the athlete's problems, rather than the investigator's pet theory or psychological technique, be studied. Normative data of

this type is crucial for the research team to have in order to understand which factors contribute most to performance. In addition, this information is essential to help the educational or clinical sport psychologist assess whether the athlete's problem is truly a psychological problem, rather than a physical or biomechanical problem.

The type of intensive, longitudinal study I am advocating is not easy. F. C. Hagerman (1979), Director of the Sports Physiology Laboratory at the U.S. Olympic Training Center, summed it up as follows:

> It often takes years of repetitive - even monotonous - research to accumulate enough valid, reliable data to reach a helpful conclusion about some important aspect of athletic function. I have studied skilled oarsmen for more than ten years, and only recently has our research group gathered enough data to project a physiological profile for U.S. rowers who aspire to compete at the international level. (p. 106)

This in depth approach does not leave time for the sport scientist to be a generalist on all sports. To gain the type of understanding I am advocating greater specialization is required. It takes considerable time to determine how male athletes in a given sport differ from female athletes, how elite performers differ from sub-elite, how athletes in some events differ from athletes in other events, which techniques work best in some situations, and with what type of athletes. Once information begins to emerge, it is essential that continual feedback is given to coaches and athletes and that the information is translated and disseminated intelligibly in the appropriate publication outlet for the sport

being studied. Only through this continual dialogue between coaches, athletes, and sport researchers can new interpretations and insights emerge that may eventually lead to improved techniques.

After 2 years of research we are beginning to gain an understanding of some of the physical, psychological, and psychophysiological factors that discriminate the elite rifle shooters from junior-level shooters (Landers et al., 1980). We have other variables to examine with rifle shooters and we have not even scratched the surface in understanding the factors contributing to success in pistol, skeet, trap, and running boar shooting. The knowledge gained along the way must be replicated and the reliable findings incorporated in training programs that are studied over time with younger shooters. It is evident that this approach is on-going, initially raising many more questions than answers.

At the same time that sport psychologists are involved in longitudinal research of the type I have described, they should also be working toward the scientific validation of psychological skills programs. We need to know the conditions under which a given technique is most beneficial in maximizing the performance and psychological well-being of the athlete. For example, will stress inoculation reduce an athlete's precompetitive anxiety? Is it equally effective for all types of athletes and for all types of sports? How does it compare in effectiveness to other anxiety reduction techniques? These questions need to be answered soon. Due to the paucity of applied sport psychology research on athletes, the research potential in this area is tremendous.

Within the framework I have described I question the role of an "educational sport psychologist." What is desperately needed in sport

psychology is people who are trained to do theoretical and applied research with athletes in order to provide the type of research findings I have described. The application of a single untested technique is premature. For the time being, I would like to see the educational sport psychologist being first and foremost a good researcher who is motivated to apply findings to athletes, coaches, and others. Eventually, as more information becomes available, there may be an opportunity for sport psychologists to develop scientifically tested psychological skills training programs. In all likelihood, however, they will have to be knowledgeable of many treatment programs and use them as the situation warrants. Furthermore, it will have to be determined if the role of the educational sport psychologist can be filled by paraprofessionals with little or no scientific training or by sport scientists who receive extensive work in behavior therapy applied to athletes. I, of course, prefer the latter approach. All too often psychological skills are taught by famous athletes with little or no formal psychology or sport science training. Except for having read the best selling books on self-hypnosis, imagery, and positive thinking, these paraprofessionals, (or in some cases nonprofessionals) lack the training necessary for objective assessment of the packages they are promoting.

I would like to see educational sport psychologists formally educated in accordance with the model proposed at the Boulder Conference in 1949 (Reisman, 1976). This model, which includes training in scientific theory and methodology as well as psychological skills training, has been adopted by most APA-approved clinical psychology programs. To be certified as an educational sport psychologist, a Ph.D. should be obtained

in a psychology-based program.[5] This program would include research and theoretical bases of psychology, movement science, and an internship that provides experiences in applying psychological knowledge to problems athletes may be having. Of course, the internship should be supervised by a licensed psychologist who has also published sport research and has experience in working with athletes.

I would like to see a professional certification developed similar to that currently in use by the American College of Sports Medicine for certifying stress testing. The certificate would govern the use of the title "Educational Sport Psychologist." It has no legal meaning, but from a professional standpoint eventually it would be necessary to be certified in order to be employed as an educational sport psychologist.

I believe that this model will force many physical education-trained sport psychologists to work more closely with clinical psychologists in the education of this type of sport psychologist. The person certified as an educational sport psychologist would have the research skills necessary to conduct studies in this area. After all, regardless of whether they label themselves as sport scientists or educational sport psychologists, their academic reputations will still be based on the quality of their theoretical and applied research. The educational sport psychologist trained in the manner I have described would be more likely to offer scientifically unsubstantiated techniques as "experimental in nature," rather than as panaceas to common problems encountered by athletes. In addition, this person could more readily recognize physical or motor problems and psychological abnormalities so the athlete could be referred to physicians, kinesiologists, or clinical psychologists.

I suspect that some aspects of my recipe will be met with considerable resistance. It is not a simplistic proposal and there are undoubtedly easier ways to prepare educational sport psychologists. Some of the problems associated with providing a supervised internship program and team approach to sport science research can be solved through closer ties with clinical psychology faculty as well as other experimental psychologists and sport scientists. Some U.S. programs are already moving in this direction, and I suspect that it will not be long before these programs are fully implemented. I must emphasize that I am enthusiastic about a psychological skills approach with athletes provided it is based upon research and administered by competent professionals.

An increase in the type of longitudinal sport research I described previously should produce a broader understanding and we should eventually expect to witness a sharp decline in the number of little studies bearing little relation to each other. Moreover I suspect that the adoption of the Boulder model will eventually lessen some of the distrust that currently exists between sport scientists and those who claim to be educational sport psychologists. A closer association between sport scientists and those practicing the art of psychology would increase the likelihood of sport scientists establishing and maintaining an interest in the real problems of athletic performance. The professionally oriented educational sport psychologist, on the other hand, would be more alert to the need for assessing the methods employed by generating and testing alternate deductions and hypotheses. If I am right, we may see a much greater spirit of cooperation in the future, and this should only help to benefit the athletic community.

Research Notes

1. Alkire, M. United States research on women shooters. Paper submitted for publication to International Shooting Sport, February, 1980 (copies can be obtained by writing to Daniel M. Landers, Sports Research Building, The Pennsylvania State University, University Park, PA 16802).

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Footnotes

1. My remarks will focus on performance not because it is necessarily more important, but simply because this is the dominant thrust in sport psychology applied to elite athletes, and is also the dominant theme of the sport psychology papers in this volume.

2. This is a longitudinal study which is supported by a grant-in-aid from the National Rifle Association. Thus far we have compared data from 13 elite U.S. shooters, who have collectively obtained 43 individual and 84 team medals since 1964 in the Olympic Games and World Shooting Championships, to a sample of 90 sub-elite and junior-level rifle, pistol, skeet, and trap shooters (see Landers, Christina, Hatfield, Daniels, & Doyle, 1980, for a review).

3. Some of our recent psychophysiological studies on rifle shooters have shown no consistent group patterns in the relationship between heart rates (before, during, and after shooting) and performance scores. Individual comparisons for 40 shots in either the kneeling or standing positions showed that some shooters' performance was better when their heart rates were low, whereas other shooters performed best when their heart rate was high.

4. The average heart rate for all shooters (N = 22) was 97. They actually raised their heart rates 22 bpm above their basal state prior to shooting.

5. By psychology based I mean that the course work and training would primarily be psychological and sport psychological in nature. The degree can be offered either by the Department of Physical Education or the Department of Psychology, just so long as it meets the requirements necessary for certification.